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Docket No.: 5232-0103PUS1  
(PATENT)

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

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In re Patent Application of:  
Yoshinori SHIMIZU et al.

Application No.: 10/566,216

Confirmation No.: N/A

Filed: January 27, 2006

Art Unit: N/A

For: LIGHT EMITTING APPARATUS, LED  
LIGHTING, LED LIGHT EMITTING  
APPARATUS, AND CONTROL METHOD OF  
LIGHT EMITTING APPARATUS

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Examiner: Not Yet Assigned

**LETTER**

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

Subsequent to the filing of the above-identified application on January 27, 2006, attached hereto is an English Translation of the International Preliminary Report on Patentability issued by the International Bureau on behalf of the International Searching Authority. Please make this document of record for the above-identified application.

Application No.: 10/566,216

Docket No.: 5232-0103PUS1

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or to credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17; particularly, extension of time fees.

Dated: August 4, 2006

Respectfully submitted,

By 

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Attachment(s) **PCT/IB/338, PCT/ISA/237**

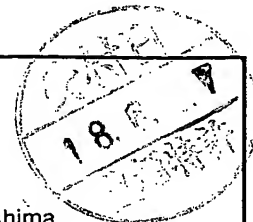
From the INTERNATIONAL BUREAU

**PCT**

NOTIFICATION OF TRANSMITTAL  
OF COPIES OF TRANSLATION  
OF THE INTERNATIONAL PRELIMINARY REPORT  
ON PATENTABILITY  
(CHAPTER I OR CHAPTER II  
OF THE PATENT COOPERATION TREATY)  
(PCT Rules 44bis.3(c) and 72.2)

To:

TOYOSU, Yasushi  
1-5-9, Kanazawa, Tokushima-shi, Tokushima  
7700871  
JAPON



Date of mailing (day/month/year) 26 May 2006 (26.05.2006)	
Applicant's or agent's file reference 62003078PC	<b>IMPORTANT NOTIFICATION</b>
International application No. PCT/JP2004/010623	International filing date (day/month/year) 26 July 2004 (26.07.2004)
Applicant NICHIA CORPORATION et al	

## 1. Transmittal of the translation to the applicant.



The International Bureau transmits herewith a copy of the English translation of the international preliminary report on patentability (Chapter I).



The International Bureau transmits herewith a copy of the English translation of the international preliminary report on patentability (Chapter II).

## 2. Transmittal of the copy of the translation to the designated or elected Offices.

The International Bureau notifies the applicant that copies of that translation have been transmitted to the following designated or elected Offices requiring such translation:

None

The following designated or elected Offices, having waived the requirement for such a transmittal at this time, will receive copies of that translation from the International Bureau only upon their request:

AE, AG, AL, AM, AP, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EA, EC, EE, EG, EP, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OA, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW

## 3. Reminder regarding translation into (one of) the official language(s) of the elected Office(s).

The applicant is reminded that, where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary report on patentability (Chapter II).

It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned within the applicable time limit (Rule 74.1). See Volume II of the PCT Applicant's Guide for further details.

The International Bureau of WIPO  
34, chemin des Colombettes  
1211 Geneva 20, Switzerland

Authorized officer

Yoshiko Kuwahara

Facsimile No.+41 22 740 14 35

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# PATENT COOPERATION TREATY

# PCT

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY (Chapter I of the Patent Cooperation Treaty)

(PCT Rule 44bis)

Applicant's or agent's file reference 62003078PC	<b>FOR FURTHER ACTION</b>	See item 4 below
International application No. PCT/JP2004/010623	International filing date ( <i>day/month/year</i> ) 26 July 2004 (26.07.2004)	Priority date ( <i>day/month/year</i> ) 28 July 2003 (28.07.2003)
International Patent Classification (8th edition unless older edition indicated) See relevant information in Form PCT/ISA/237		
Applicant NICHIA CORPORATION		

1.	This international preliminary report on patentability (Chapter I) is issued by the International Bureau on behalf of the International Searching Authority under Rule 44 bis.1(a).																								
2.	This REPORT consists of a total of 5 sheets, including this cover sheet.  In the attached sheets, any reference to the written opinion of the International Searching Authority should be read as a reference to the international preliminary report on patentability (Chapter I) instead.																								
3.	<p>This report contains indications relating to the following items:</p> <table style="width: 100%;"> <tr> <td style="width: 10%;"><input checked="" type="checkbox"/></td> <td style="width: 30%;">Box No. I</td> <td style="width: 80%;">Basis of the report</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. II</td> <td>Priority</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. III</td> <td>Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. IV</td> <td>Lack of unity of invention</td> </tr> <tr> <td><input checked="" type="checkbox"/></td> <td>Box No. V</td> <td>Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. VI</td> <td>Certain documents cited</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. VII</td> <td>Certain defects in the international application</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. VIII</td> <td>Certain observations on the international application</td> </tr> </table>	<input checked="" type="checkbox"/>	Box No. I	Basis of the report	<input type="checkbox"/>	Box No. II	Priority	<input type="checkbox"/>	Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability	<input type="checkbox"/>	Box No. IV	Lack of unity of invention	<input checked="" type="checkbox"/>	Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement	<input type="checkbox"/>	Box No. VI	Certain documents cited	<input type="checkbox"/>	Box No. VII	Certain defects in the international application	<input type="checkbox"/>	Box No. VIII	Certain observations on the international application
<input checked="" type="checkbox"/>	Box No. I	Basis of the report																							
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<input type="checkbox"/>	Box No. VII	Certain defects in the international application																							
<input type="checkbox"/>	Box No. VIII	Certain observations on the international application																							
4.	The International Bureau will communicate this report to designated Offices in accordance with Rules 44bis.3(c) and 93bis.1 but not, except where the applicant makes an express request under Article 23(2), before the expiration of 30 months from the priority date (Rule 44bis .2).																								

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland	Date of issuance of this report 15 May 2006 (15.05.2006)
Facsimile No. +41 22 740 14 35	Authorized officer  <div style="text-align: center; font-weight: bold;">Yoshiko Kuwahara</div> Telephone No. +41 22 338 90 90

# PATENT COOPERATION TREATY

TRANSLATION

From the  
INTERNATIONAL SEARCHING AUTHORITY

PCT

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

To:

Date of mailing  
(day/month/year)

Applicant's or agent's file reference

**62003078PC**

**FOR FURTHER ACTION**

See paragraph 2 below

International application No.

**PCT/JP2004/010623**

International filing date (day/month/year)

**26.07.2004**

Priority date (day/month/year)

**28.07.2003**

International Patent Classification (IPC) or both national classification and IPC

Applicant

**NICHIA CORPORATION**

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/JP

Authorized officer

Facsimile No.

Telephone No.

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/JP2004/010623

Box No. I      Basis of this opinion

1. With regard to the language, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ This opinion has been established on the basis of a translation from the original language into the following language  
\_\_\_\_\_, which is the language of a translation furnished for the purposes of international search (under Rule 12.3 and 23.1(b)).

2. With regard to any nucleotide and/or amino acid sequence disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:

a. type of material

☐ a sequence listing

☐ table(s) related to the sequence listing

b. format of material

☐ in written format

☐ in computer readable form

c. time of filing/furnishing

☐ contained in the international application as filed.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority for the purposes of search.

3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table(s) relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

4. Additional comments:

**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY**

International application No.

PCT/JP2004/010623

<b>Box No. V</b>	<b>Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</b>		
<b>1. Statement</b>			
Novelty (N)	Claims	1-20	YES
	Claims		NO
Inventive step (IS)	Claims	9-11, 15	YES
	Claims	1-8, 12-14, 16-20	NO
Industrial applicability (IA)	Claims	1-20	YES
	Claims		NO
<b>2. Citations and explanations:</b>			
<p>Document 1: JP 2000-112429 A (Matsushita Electric Industrial Co., Ltd.), 21 April 2000, claims</p> <p>Document 2: WO 2000/001046 A1 (Honeywell Inc.), 06 January 2000, claims 21, 25-28, page 2, line 18 to page 3, line 25, page 4, lines 6-7 and 23-26</p> <p>Document 3: US 2003/0011553 A1 (OZAKI), 16 January 2003, Par. No. 0101</p> <p>Document 4: US 2003/0016198 A1 (NAGAI et al.), 23 January 2003, Par. Nos. 0076, 0081-0103, 0130 and Figs. 3-6</p> <p>Document 5: JP 2002-170999 A (Nichia Kagaku Kogyo KK), 14 June 2002, Par. Nos. 0006, 0013, 0045</p> <p>Document 6: US 2002/0175632 A1 (TAKEGUCHI), 28 November 2002, Par. Nos. 0013-0014</p> <p>Document 7: US 2003/0063462 A1 (SHIMIZU et al.), 03 April 2003, Par. No. 0068</p> <p>The inventions of claims 1-4, 7-8, 20 do not appear to involve an inventive step based on documents 1, 2 cited in the ISR. Document 1 describes a full-color display device comprising red, green, and blue LEDs, wherein the respective chromaticity changes are derived based on the detection signals relating to temperature changes of light-emitting elements and deviation from the desired chromaticity, e.g., white balance, is then corrected. Furthermore, document 2 describes changing an electric current value according to temperature, thereby fixing the output wavelength or spectrum of a light-emitting diode, and using a value following a nonlinear function of temperature in a reference table as a current value. Accordingly, the inventions described in documents 1, 2 are created to compensate changes in chromaticity (output wavelength or spectrum) corresponding to temperature in a light-emitting diode. Therefore, employing the control means for chromaticity described in document 2 in the invention of document 1 would be easy for a person skilled in the art.</p>			

Supplemental Box

In case the space in any of the preceding boxes is not sufficient.

Continuation of: V.2

The invention of claim 5 does not appear to involve an inventive step based on documents 1, 2 and document 3 cited in the ISR. Document 3 describes conducting compensation of brightness decrease caused by degradation of LED with time by changing the electric current value. Conducting the compensation of such degradation with time based on the prescribed function in the same manner as in document 2 does not appear to be difficult.

The invention of claim 6 does not appear to involve an inventive step based on documents 1, 2. Document 2 describes stabilizing the temperature of a light source by using a heater or a cooler with the object of stabilizing the output of the light source.

The invention of claim 12 does not appear to involve an inventive step based on documents 1, 2 and documents 4, 5 cited in the ISR. Employing pulse width modulation as described in documents 4, 5 for brightness adjustment in the invention described in document 1 could easily be achieved by a person skilled in the art.

The invention of claim 13 does not appear to involve an inventive step based on documents 1, 2 and document 6 cited in the ISR. Document 6 describes that the described color rendering ability is obtained by using a red LED, a green LED, a blue LED, and a white LED, and employing the LEDs of four types to improve the color rendering ability in the invention of document 1 would be easy for a person skilled in the art.

The inventions of claims 14, 16, 18 do not appear to involve an inventive step based on documents 1, 2, 4. Document 4 describes a memory element such as a flash memory for storing correction data such as electric current of LEDs, a register for a LED of each color for storing chromaticity correction data, and a DA converter for the LED of each color. Accordingly, in the inventions described in documents 1, 2, too, the data necessary for correcting the chromaticity of LED are stored in storage means. Therefore, employing the circuit configuration described in document 4 when the technology described in document 2 is used in the invention described in document 1 would be easy for a person skilled in the art.

The invention of claim 17 does not appear to involve an inventive step based on documents 1, 2. Document 2 describes that the electric current value is a nonlinear function of temperature, and employing a third-order function as the nonlinear function does not appear to be difficult for a person skilled in the art.

The invention of claim 19 does not appear to involve an inventive step based on documents 1, 2. As also described in document 7 cited in the ISR, forming blue and green light-emitting diodes from semiconductor materials such as nitride semiconductors and forming a red light-emitting diode from an AlInGaP-type semiconductor material could easily be achieved by a person skilled in the art.

The inventions of claims 9-11, 15 are neither described in the documents cited in the ISR nor obvious to a person skilled in the art.